

**EFFECT OF ULTRASONICATION DURATION ON
MECHANICAL PROPERTIES AND MOISTURE
ABSORPTION OF PVA FILM**

FINAL PROJECT



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ABSTRACT

Synthetic plastics are used widely in daily life. A heavy environmental pollution accompanies their uses, because they need hundreds of years to degrade. Therefore, biodegradable materials have been paid attention as alternatives to this problem. One of the biodegradable material is poly(vinyl alcohol) (PVA). This material is very promising candidate for the preparation of biodegradable plastics due to its biodegradability, biocompatibility, chemical resistance and excellent physical properties. Unfortunately, the neat PVA has low mechanical properties. The purpose of this study is to investigate effect of ultrasonication on properties PVA, including increasing tensile strength and moisture absorption. The characterization of PVA films was tensile test and moisture absorption for mechanical properties and water resistance ability, respectively. Gel of PVA was sonicated with various duration (0, 2.5, 5, 7.5, 10 minutes). The tensile strength of PVA film increased after ultrasonication. The maximum tensile strength was 25.5 MPa at 7.5 min. However, it dropped became 16.66 MPa at 10 min. The elongation and elastic modulus also tend to increase as the addition of ultrasonication time. The sonicated PVA films can resist the moisture as it increases of duration time but still less than untreated PVA film.

Keywords: biodegradable, moisture absorption, PVA, ultrasonication, sonicated, tensile test.